



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

## INDIVIDUAL DETERMINISM AND SOCIAL SCIENCE.

### I.

Meyer and Darwin do not deserve the admiration or devotion solely of the followers of a certain class of studies, *i. e.*, physics, mechanics or biology;\* these men have revealed to us mysteries that change completely the content of human knowledge. They are two discoverers who complete and supplement each other. It could not be otherwise; Darwin must have profited much from the discoveries of Robert Meyer, from the studies of Hermann von Helmholtz, by the strong positivist influence given to research in the realm of physico-chemical science, and by the ever increasing importance accruing to the problems of mathematical mechanics. In this way only it became possible to solve a mass of problems whose elucidation did much to clear the way for the conception of physiological life as a pure mechanism. Further, the minds of scholars had already become accustomed to hear of *forces* which act and react and then are *transformed* while still remaining identical in their real nature. In fact, Comte himself, powerfully influenced by physico-chemical science, attempted as early as 1842 to extend it to social science.† Thus it would have been impossible to have conceived of Darwinism (I am not speaking of evolution) without the progress already made in physico-chemical science in the first half of this century. As a result of this movement the law of the conservation of

\* Cf. H. von Helmholtz, "*Ueber die Erhaltung der Kraft*," 1847; R. Meyer, "*Bemerkungen über die Kräfte der unbelebten Natur*," 1842; "*Die organische Bewegung in ihrem Zusammenhang mit den Stoffwechsel*," 1845.

† Cf. E. de Roberty, "*A. Comte et H. Spencer*," Paris, 1894; E. Faguet, "*A. Comte, ses idées générales et sa méthode*," in the *Revue des deux mondes*, July 15, 1895; G. de Greef, "*Le transformisme sociale*," Paris, 1895, p. 366; Heinrich Waentig, "*Auguste Comte und seine Bedeutung für die Entwicklung der Sozialwissenschaften*," Leipzig, 1894.

energy held the first place; and possibly, as many think,\* it remained second to none after the publication of the volume on the Origin of Species. This opinion may be accepted even by those who do not hold that the origin of species was not explained in Darwin's volume on "The Origin of Species." Darwin showed the method of applying this energy. Hence I very willingly accept the opinion of Hæckel, who defines the supposed theory of descent as "the *mechanical explanation* of the *phenomena* of *organic forms*."† Meyer demonstrated the persistency of organic energy. Darwin explained the method of the action of this energy: "Thus everything depends upon *matter* and *motion*, and we are led back to the true philosophy of nature inaugurated by Galileo, namely, that in nature all is matter and motion, or simply a modification of the same, by the simple transformation of parts or quality of motion. . . . This supposition is, however, false, if it is understood that in the living animal there is a force of vitality, a source of force, independent of ordinary molecular action, and that there is in it a chemical composition differing from that in organic bodies.'"‡

Helmholtz had already succeeded in measuring the velocity with which nervous impulses traverse the motor nerves and had found the velocity to be thirty metres a second. The results obtained by Rutherford, and which he has recently communicated to the British Association for the Advancement of Science, contradict in some degree this measurement. Rutherford observed that the reaction-time is not the same for sight as for hearing and touch. He was able to establish by experiments upon eight intelligent men, whose age varied from nineteen to sixty-two years, that

\* Cf. A. Mosso, "*La Fatica*," Milan, 1891, p. 67.

† E. Hæckel, "*Schöpfungsgeschichte*," Jena, ed. 1891. This affirmation of Hæckel is a contradiction of many others, claiming that Darwin discovered the origin of man. The passage cited corrects this hazardous affirmation.

‡ G. Secchi, "*L'Unità delle Forze fisiche*," Milan, 1879, Vol. ii, p. 377; See A. Mosso, *Op. cit.* pp. 71-72; E. Morselli, "*Carlo Darwin ed il Darwinismo*," Milan, 1892.

the reaction-time for sight is from 16 to 22 hundredths of a second, while for touch and hearing, it is from .14 to .19. The shortest reaction-time was found when the response was given by the hand on the same side as the ear or the part of the body touched. However this may be, the principle from which Helmholtz set out remains true. In 1847, Helmholtz, ignorant of the works of Meyer, Colding and Joule on the relations existing between mechanical and psychical work, published an important document on the conservation of energy (*Ueber die Erhaltung der Kraft*), which he completed later after learning of the results obtained by Joule. In this work Helmholtz presented the relations existing between mechanical and psychical phenomena, and confirmed the truth of Meyer's theory of the conservation of energy.

To-day, through the experiments of Mosso, "the thermometer shows a transformation of energy in the brain which results in the production of heat."\* But Mosso was not unduly enthusiastic over his experiments, and with scientific calm writes: "In order to discredit the hypothesis that the psychical and motor activity of the brain is in intimate relation with the thermal processes, it is sufficient to have observed in the preceding chapter that a decided increase of cerebral temperature is produced *without apparent* modification of psychical or motor activity of the brain, and that vice-versa during periods of great activity of the brain, its temperature does not vary to any sensible degree." I do not know, however, how far Professor Sergi is right in claiming that Mosso does not draw the proper conclusion from his observations. The observation of Sergi is worthy of consideration. It is easy to understand how psychical energy manifested by thoughts, by psychical activity, cannot be manifested by an increase of heat. If we have in the brain 100 units of psychical energy, and use

\* Cf. A. Mosso, "*La Temperatura del Cervello*," Milan, 1895, p. 89; "*La Température du Cerveau*," Turin, 1894.

80 in thought, it is clear that only 20 remain for the increase of heat. Hence that which at first sight would seem to be a contradiction is, in reality, an additional proof of the conservation and of the transformation of psychical energy. While this is a very pleasing suggestion, it cannot be denied that it is based upon a very vague hypothesis. Besides being vague, it is contradicted by Mosso's own experiments. On page 197 of his recent work, he writes: "The non-dependence of the cerebral temperature on the temperature of the blood is made evident in the given experiment, where, the convulsions having ceased, the cerebral temperature presents a new increase of which there is scarcely the slightest trace in the arterial blood and muscle curves. Here we have a proof that these waves of cerebral temperature do not depend on the variations of the blood-vessels, because in this case the medulla oblongata had been subjected to a lesion."

Hence the demonstration made by physicists, that a definite quantity of heat can be transformed into a given quantity of work, and this quantity of work again transformed into the same amount of heat, etc., if applied to biological phenomena of man, is entirely premature and illusory when extended to psychical phenomena. When, therefore, Morselli writes: "Psychology has been able to show that the determinism of psychical phenomena is precisely of the same nature as that of biological phenomena,"\* he makes a statement which may be true, but which cannot as yet be accepted as proven. The fact that physical well-being results in optimism, and that this leads to benevolence, to sympathy, to hope, to altruism, is not sufficient proof of this affirmation—while misery and deprivation result in physical despondency and exhaustion, give rise to the lowest instincts, weakening the inhibitory powers of the brain, and produce pessimism, egoism, indifference, apathy.

\* E. Morselli, "*L'Eredità materiale, intellettuale e morale, del Secolo XIX*," Genoa, 1895, p. 14.

This might furnish a reason for the fact that acts of daring, of altruism, of heroism, belong to early manhood while egoism is characteristic of children and the aged.

The possible transformation of physical phenomena into mental phenomena, or vice-versa is far from being proven. The transformation of physical phenomena into mental phenomena, Spencer considered more probable than the transformation of mental phenomena into physical phenomena.\* Roberty observes a curious contradiction, namely, while A (physical phenomenon) corresponds to, or is equal to B (mental phenomenon), B is not equal to A.† It would be most arbitrary to admit at the present time the identity of the two classes of phenomena. The manifestations of individual human conduct are too vague to infer from them that psychological laws are identical with those of biology. Physiology weighs and measures, while the beginnings of psychology are largely to be made.

I would simply say that we are to-day ignorant of these so-called psychological laws that some persons affirm.

## II.

Our brain is certainly composed of matter, but the properties and composition of this matter elude us almost entirely. Nevertheless, it is affirmed that each individual has his own physical and psychical individuality (temperament and character) which is determined by physico-psychical heredity.‡ The affinities which psychology includes are most varied; the factors of the psychical are psychological, nervous, and hence also physico-chemical. The *Ego* is the complex result of chemical, physiological and psychological reactions. From this point of view the observation of Wundt is true that "nothing is more natural than to think of consciousness as a kind of stage upon which

\* H. Spencer, "*Principes de psychologie*," Paris, pp. 160-62.

† E. de Roberty, "*La recherche de l'unité*," Paris, 1893, p. 199.

‡ C. Richet, "*L'hérédité psychologique*," 3d ed., Paris, 1887.

our ideas are the actors, appearing, withdrawing behind the scenes, and coming on again when their cue is given.'\* Consciousness is cognizant of the results of work done in the hidden laboratory situated within it; such work can be called also *unconscious* if by this general term it is intended to designate the mechanico-physico-chemical work of the nervous substance, and also of that external condition of organic-psychical work.†

We have numerous more or less probable theories of sensation and perception, which depend merely upon hypotheses. The sensory nerves which produce pleasure or pain upon being excited, nearly all have their terminations in the skin.‡ The brain as well as the internal organs in general are non-sensitive, and it is this fact which renders us incapable of judging of our internal sensations. There is no doubt that all psychical activity is determined by the molecular movement of the cerebral substance, and especially of the gray cortex; but that an idea as such, or a sentiment, or an act of volition as such, are in themselves true and proper motions, we cannot believe until the scientific truth be affirmed with certainty.§ However this may be, the mind of each individual necessarily receives sensations continually, and many of these remain impressed upon it. How this takes place we do not know.||

In the mind of every individual consciousness develops. This is the result brought about in his brain, from his past, from his experience, from the environment in which he has lived. Thus, if Ferdinando Gregorovius had not

\* Wundt, "*Psychologie physiologique*," Paris, Vol. i, p. 536.

† G. Marchesini, "*Saggio sulla naturale Unità del pensiero*," Florence, 1895, p. 30. "Mais dans le cerveau se trouvent en outre réunis les centres nerveux spécifiques, dont chacun correspond à une partie déterminée de cellules, de tissus, et d'organes intérieurs et périphériques du corps. Indirectement la conscience et la volonté sont donc un produit non seulement du cerveau, mais de la totalité des cellules, dont est constitué l'organisme dans son ensemble." P. de Lilienfeld, "*La pathologie sociale*," in the *Revue internationale de sociologie*, 1895.

‡ A. Mosso, "*La Fatica*," p. 266; Nitti, "*Il Lavoro*," Turin, 1895.

§ G. Marchesini, *Op. cit.*, p. 16.

|| C. Richet, *Op. cit.*

been born in the mediæval castle of Heidelberg, and lived there for many years, if his imagination had not been awakened by the great Polish revolution of 1830, in which he witnessed so many bloody struggles, certainly, as he himself recognizes, he would not have written the history of Rome.\* In Darwin's life it can easily be seen how enormous was the influence of these factors upon his intellectual development.† Richard Wagner writes: "The remarkably keen feeling of sadness which usually overpowered me while directing our ordinary operas was often interrupted by an inexpressible and unusual happiness when I attained at times from the representation of noble works, a most intimate knowledge of the absolutely incomparable effect of musical and dramatic combination, at the very moment of the representation, an effect so intimately felt, of such depth, and at the same time of such ardor, as no other art can produce."‡ Thus he tells us through what phases of depression, of vivid impressions, of warm enthusiasm, his musical nature came little by little to be formed.

Now a new fact or phenomenon, which is presented to the brain of an individual, is as if it were reflected upon this *substratum* of consciousness already acquired. Every individual explains, understands, and sees new phenomena colored by those already seen. In other words, each of us sees the future and the present subject to his own concepts formed in the past. Ferri exaggerates when he writes that "in spite of the apparent influence of ideas and opinions upon individual activity, the truth is, on the contrary, that man works as he feels, and not as he thinks."§ The mental development of a given individual during his life may be represented by a line: A——c——d—f——B.

\* F. Gregorovius, "*Diari Romani*," Milan, 1895, p. xiii-xv.

† Francis Darwin "Life and Letters of C. Darwin," London, ed., 1895.

‡ R. Wagner, "*Musica dell'avvenire*," Milan, 1892, p. 21.

§ F. Ferri, "*La sociologie criminale*," Turin, 1893, p. 374; Ad. Wagner, "*Statistisch-anthropologische Untersuchung der Gesetzmässigkeit in den scheinbar willkürlichen Handlungen*," Leipsic, 1864.



Thus it is easy to perceive that according to the various degrees *c, d, f*, etc., of the mental development which is formed subject to surrounding influences, this individual judges of phenomena and affairs in a different manner. According to the development of his own personality, in this conception, "notre moi," as M. Barrés says, "c'est la manière dont notre organisme réagit aux excitations."\* Our mind is formed by a stratification in such a way as to make, as it were, a true photographic plate. New impressions, therefore, depend upon those preceding. It has been said, that as each planet has its own autonomy, and is united with the system of the universe, so free-will is determined by the general purpose and by the general laws of life.† But the feeling of purpose is not determined by the structure and hence by the needs of the individual. With Calderon we ask ourselves: What is free-will when it is determined? Those who deny free-will place individual determinism outside of the individual himself. They do not leave any part to the individual. Thus it is said: "Among the forces of whose action, whether beneficent or harmful, we are yet conscious, without being able to define, analyze, or avoid them, are electricity and magnetism. Not one of us in the normal condition of health, and atmospheric surroundings, is conscious of the magnetic and electric currents which pass through us, much less those which are developed in the organism. Yet no one will doubt the influence which the electricity of the atmosphere, as well as that of the organism, exercises upon the physical body."‡ I do not deny the influence of these factors, but their action is concentrated in the individual. The human mind determines individual action in a given manner precisely because

\* M. Barrés, "*Examen de trois idéologues*," Paris, 1892.

† L. Luzzatti, "*Saggio sulle dottrine dei precursori religiosi e filosofi dell'odierno fatalismo statistico*," in *Riforma Sociale*, anno II, vol. iii. The proof of my affirmation can be found in the little work by G. Fischer, "*Die Freiheit des menschlichen Willens und die Naturgesetze*," Leipzig, 1871, who also denies free-will, and in the volume by Fousengrive, entitled "*Le libre arbitre*"

‡ D. Metzger, "*Essai de spiritualisme scientifique*," Paris, 1895.

in its formation it has undergone the action of these factors.

In recent times the influence of external causes, such as the salubrity of the locality in which laborers work, has been much exaggerated, and on the contrary, the importance of the power of resistance of the organism of the laborer has been too little considered. But the reports of inspectors of factories constantly note that where the work is prolonged too long and results in fatigue, the salubrity of the locality is insufficient to preserve the laborer from the consequences of fatigue and exhaustion.\* From this cause we find that among the rich and poor, not only does the mortality differ, but the mortality itself depends upon different influences, so it may be said that there is a real pathology different from each class in society. A large proportion of the diseases of the laboring classes depends upon nothing else than an excess of work, work exhausting and painful, predisposing them to all diseases. In other words, the physical organism is slowly formed through external influences, and is then reacted upon subsequently in various ways, according to the structure which has been formed. This is true also for the individual mental development. Though individual actions are, scientifically, inexplicable phenomena individual determinism cannot be doubted. It would be denying the law of the conservation and transformation of energy common to all matter. Individual determinism, however, instead of being due to external mechanical action, as is commonly supposed, is due to the mechanical formation of the human mind, and to the successive phenomena of action and reaction, which are always mechanically developed in it. Therefore for those who deny free-will, individual personality disappears; this personality is, in their eyes, entirely passive, a pure and simple result of cosmico-social surroundings. Now this is not true. If the individual is submitted to all these influences, when he

\* Nitti, *Op. cit.*, p. 184.

acts, he acts almost entirely on the basis of the personality which these conditions have developed in him. The determinism of a human being is not as it were external to the individual, as the so-called positivists have affirmed, but it dwells in the individual himself—is within him.

Others, ignorant of the structure and formation of the human mind, and discouraged by the great difficulty of searching into the causes which govern individual actions, have pretended to solve this difficulty by means of the so-called free-will theory. When, however, it was possible to establish the fact that marriages, births and deaths take place with a greater regularity than cyclones on the ocean or the number of centimetres of water which the rain-gauge indicates in a given region for the different seasons, there was then the utmost necessity for modifying preconceived notions of human nature as something entirely unique and above everything else in creation. Thus arose numerous eclectic free-will schools. Free-will, according to the prevailing opinion, was reserved for the single individual, and it was recognized that it did not exist in the mass of the population. (Quetelet, Dufar, Rümelin, Wappäus, Messedaglia, Mayr, Bodio, Oettingen, Gabaglio, etc., etc.)

The same story repeats itself; we had not yet come to understand the forces which form individual character, and we said human conduct was free, just as before the conduct of the people, of the masses had been said to be free, while the laws of conduct were unrecognized. If individual determinism cannot be demonstrated, much less can free-will be demonstrated. If individual consciousness is free, how does it happen that the regularity of its action is repeated in all social manifestations? Were this conformity merely ascertained from time to time, it might then be said to be purely accidental; but this is not the case. All social phenomena rest upon an essentially individual basis. The social phenomenon does not exist without this individuality. Individuals seek to satisfy their own desires, considering of

little account the relations which their acts will have upon social phenomena.\*

Körosi, in a recent communication to the Hungarian Academy of Sciences, gave the results of his researches in regard to the fecundity of man according to various ages. If the husband be 39 and the wife 20, the birth-rate is represented by 31 per cent; if the wife be 30, by 20 per cent. When the husband is 40 and the wife 35, the birth-rate is represented by 27 per cent; with a wife of 40 years, by 17 per cent, and with a wife of 65, by  $2\frac{1}{2}$  per cent. Now it is well-known that there are very few men who choose a wife of 65 years or even of 40 years. In consequence the birth-rate is high. But if the majority of girls are married between the ages of 20 and 30, this depends upon their individual will.

If  $x$  commits suicide, he concerns himself very little with the fact that similar decisions have already been made by other individuals, or that his death is necessary in order to make up the average of suicides in a given year. Rather do the conditions of environment develop certain tendencies in individuals, and later, when these individuals come to contend with the difficulties of life, some find themselves unequal to carrying on this struggle, and commit suicide, exactly as others become insane. Perhaps we should call the act of mental aberration voluntary?

In the United States, in 1850, in a population of 23,191,876, there were 15,610 insane persons; in 1880, in a population more than doubled, 50,155,703, the number of insane was 91,997, or three times as many in proportion. In Italy the number of insane persons, which in 1876 was 51 for every 100,000 inhabitants, in 1883 was 67.75. In France, for 100,000 inhabitants there were 131 insane persons in 1883; 133.8 in 1884; 138.5 in 1885. In Germany there were 82.7 in 1883; 84.2 in 1884; 88.5 in 1885. Thus

\* A. Small and G. Vincent, "An Introduction to the Study of Society," Chicago, 1894.

the conclusion that the advancement of civilization causes the number of insane persons to increase.\* The fact should be recognized that the increasing feverish activity of our society develops general progressive paralysis, epilepsy, etc., hence the individuals affected by mental weaknesses due to social agencies are not in a condition to resist, and become insane when they are submitted to certain other social circumstances. If the conditions of a given social atmosphere should remain always constant, we should see the number of suicides and also the number of insane persons exactly constant. But social activity from time to time undergoes many variations, owing to changing influences. The greater part of individual characteristics have developed with tendencies due to the conditions of environment; thus when other agencies are brought into action, the social life is entirely and completely changed.

The warlike origin of the Albanians, the insufficient resources of their land, and the rich valleys in their neighborhood, explain their habit of brigandage. In 1832 the Greeks and the Albanians succeeded in their war of independence, and Otho II., the second son of the King of Bavaria, ascended their throne. But did the brigandage of the Albanians terminate in 1832 on this account? The conditions of their surroundings had confirmed this habit in their character, and it will require time before the new social environment succeeds in suppressing it.†

Individual character is a result of the conditions of social and natural environment, and of hereditary phenomena, and yet under new conditions of environment it reacts in an entirely mechanical manner. It is impossible for a mass of population entirely "determined" in its action, to result from many individuals relatively free, as the theories of individual free-will affirm.

\* *Revue des Revues*, 1895.

† E. Reclus, "*Europe méridionale*," Paris, p. 185; E. Demolins, "*Les types sociaux du bassin de la Méditerranée*," Paris, 1895.

## III.

Lange writes in regard to the Germans: "Thus the utilitarian tendency presents in Germany an idealistic character. Industry never makes a prodigious forward stride as in England; one does not see cities suddenly rise from the ground, nor riches accumulate in the hands of the entrepreneurs."\* This is an observation of social psychology. It is not meant by it that *every* German corresponds to this description which he applies to the population as a whole. He means that the conditions of environment and hereditary phenomena are such as to imprint this character upon the majority of the Germans.

Psychology in its present condition describes mental phenomena external to the individual, while social psychology describes the phenomena of individual minds taken in their entirety, in their mass. Statistics give in figures, with mathematical precision for all social phenomena, that which social psychology describes in general terms. Thus what we have said in regard to social psychology applies also to statistics. Statistical laws relate to masses. They present to us social phenomena due to individual acts, because these acts are the result of conditions of environment already fixed in a similar way for each individual. If this uniformity of environment, in which the mass of mankind lives, did not exist, how could there be the average type of individual from which all others are easily differentiated?

Statistics tell us that in Italy more thefts are committed proportionately than in Russia. In other words, the feeling of respect for the property of others is less deeply rooted in Italy than in Russia. Thus when economic difficulties increase equally in Italy and in Russia, Italian criminality will increase more than Russian. The conditions of natural and social environment have developed in the minds of individuals of the two countries a different moral sentiment.

\*Lange, "*Geschichte des materialisme*," 1875.

Accordingly, in new conditions of environment the individual acts according to the personality which has been formed in him. There has been in existence in London, for several years, a committee to determine by an examination of the physical characteristics of the children of each school, those children who are weakly constituted, or mentally defective, or abnormal, and unable to contend in school or later in life with persons of average normal endowment.\* In the schools inspected, the number of these defective children is almost constant every year. Given the climatic, hygienic, physiological, and economic conditions, which exercise an influence in an almost constant degree in determining the single individuals of various generations of this population, and these abnormal children are as sure a result as are the normal children.

We can divide the influences of environment into two classes, time and locality. A region which presents the same atmospheric and meteorological conditions, etc., etc., has a population with certain demographic characteristics. This identity of conditions of environment tends to have the same effect upon the majority of individuals when considered singly. It forms individuals in a definite way, and the mass of these individuals present the same characteristics, and perform similar acts. According to official statistics the population in the following countries is divided between country and city according to these figures:

	Urban Population.	Rural Population.
Switzerland, . . . . .	16	84
Belgium, . . . . .	34.5	65.5
Russia, . . . . .	9.2	90.8
Greece, . . . . .	15	85
Denmark, . . . . .	17.6	82.4
Sweden, . . . . .	9.2	90.8
Norway, . . . . .	13	87
Holland, . . . . .	38	62
England, . . . . .	48	52
France, . . . . .	24	76

\* "*Annales de l'Institut International de Sociologie*," 1895, Vol. I.

The countries which present a proportionately small rural population are England, Holland and Belgium. This fact is easily explained when the development of industrial manufactories in these countries is taken into consideration. If no new industrial process should be discovered, if the wages of workmen and agriculturists should remain in exactly the same state as in 1893, if the agricultural production should continue the same as in this year, if, in a word, the equilibrium of 1893 should not be disturbed, then the demographic distribution of the population in city and country would be maintained in the same proportion. It is a result of the environing locality. But all these conditions tend to change. The agricultural production varies according to the meteorological conditions. In the south of Russia it is necessary to wait five or six years before having a good harvest of grain. There is a deficiency of rainfall, and only after several years of drought is there one of abundant rain. It follows from this that the peasants prefer the more steady wages in an industrial manufactory to the uncertainty of the harvests.

At Marseilles the coal which comes from England through the Strait of Gibraltar, after being carried 3000 km. is sold at a lower price than the coal which comes from the mines of Grand' Comte, 177 km. distant. This fact is due to the perfection of the English system of mining the coal, to the quality of the mines, and still more to the low rates for transportation. In time this will result in closing of the mines of Grand' Comte, or the employment of new mining machinery, or something else. If the mines of Grand' Comte should be closed, the population which is employed there would commence cultivating the land, or enter industrial establishments. Thus an exodus of the population would take place. The mortality, the birth-rate, the number of marriages, of insane, of criminals, etc., depend upon whether people live in the country or in the city. The conditions of environment are modified through the changes



which arise in the social surroundings, due to the labor of man, or to natural conditions.

From 1821 to 1881, three times as many Italians as English have migrated to the United States.\* The Italian emigrants preserve many national characteristics, a very frugal method of life, a high rate of crime, etc. But their children are less Italian, and in a less degree still are those of the third generation. Thus in spite of this great Italian emigration the mode of life in the United States, especially in the northeastern section, is essentially Anglo-Saxon. Though this assimilation does not take place suddenly, no one can deny the formation of a new character, due to the influences of the new surroundings. Between the environment and the individual, or society as a whole, there is an intimate *rapport*. Statistical investigation is based upon the equal influence which the conditions of environment exert upon the individuals who make up the population. There cannot be homogeneity in statistical principles unless they are derived from the same natural and social conditions.

The grouping of individuals in society, however, has no other *raison d'être* than that of overcoming the difficulties of the primitive environment and then of exercising natural energies in the best manner possible for the benefit of these single individuals. Human society is organized according to the nature of the individuals and the natural environment in which it exists. All the relations established between individuals depend upon these two factors. These, in their turn, are subject to the influences which are formed in them by social relations. Thus there takes place a continual transformation of natural environment, of individuals, of social relations, which in a general and comprehensive way is called social transformation, or evolution.

Rome.

G. FIAMINGO.

\* Report of Commissioner of Immigration, Washington, 1892. M. Dubois "*Sistèmes coloniaux et peuples colonisateurs*." Paris, 1895.